

Incorporating Knowledge Of Observational Uncertainties In Streamflow Forecasting Applications For The Western USA Mountains

Figures

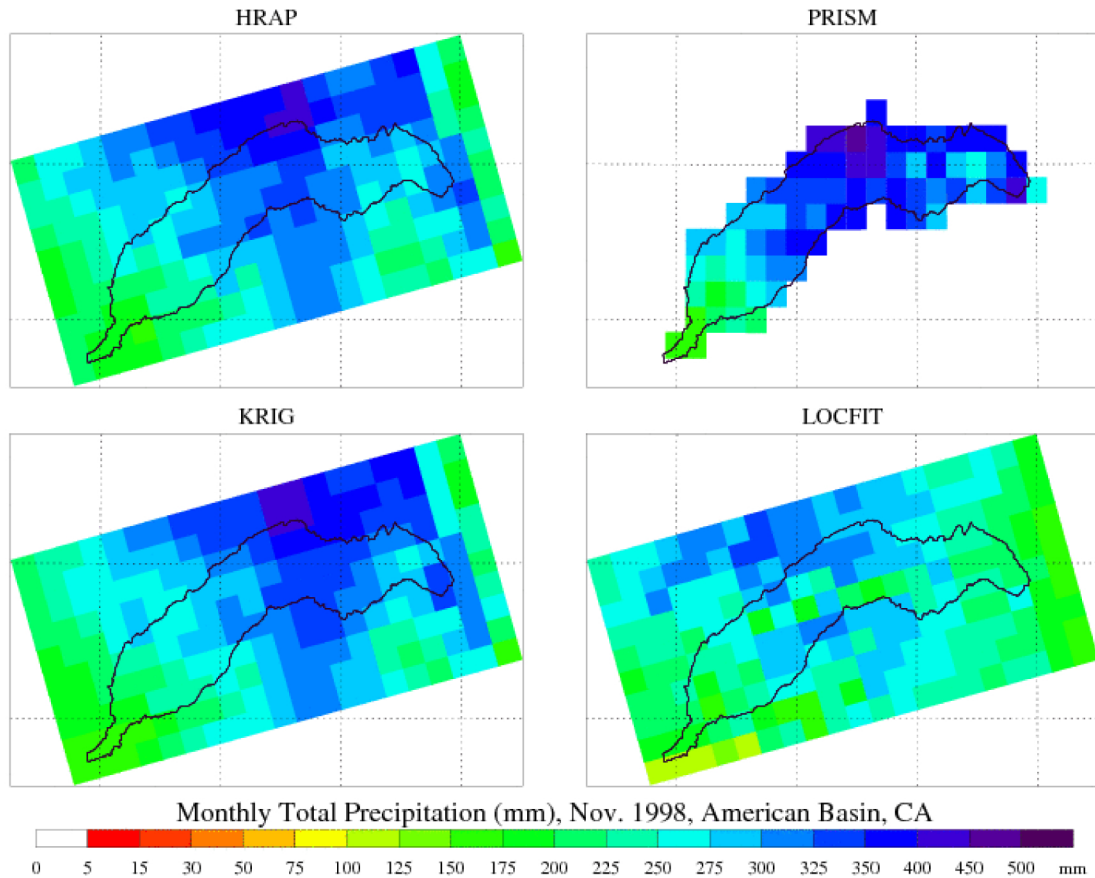


Figure 1: Monthly total precipitation for the American River basin for November 1998. Several different methods of deriving grid-based precipitation are shown here. The HRAP data was compiled by NOAA/NWS/OHD for use in the DMIP2 experiments. PRISM is a long running data stream developed at Oregon State University. We developed the KRIG method for the purposes of extending the HRAP data beyond 2002; the method performs direct kriging between station data (COOP and SNOTEL) and the grid boxes using covariance relationships based on historical data. The LOCFIT method uses an adaptive-order local polynomial regression approach to interpolate station data to the desired grid.

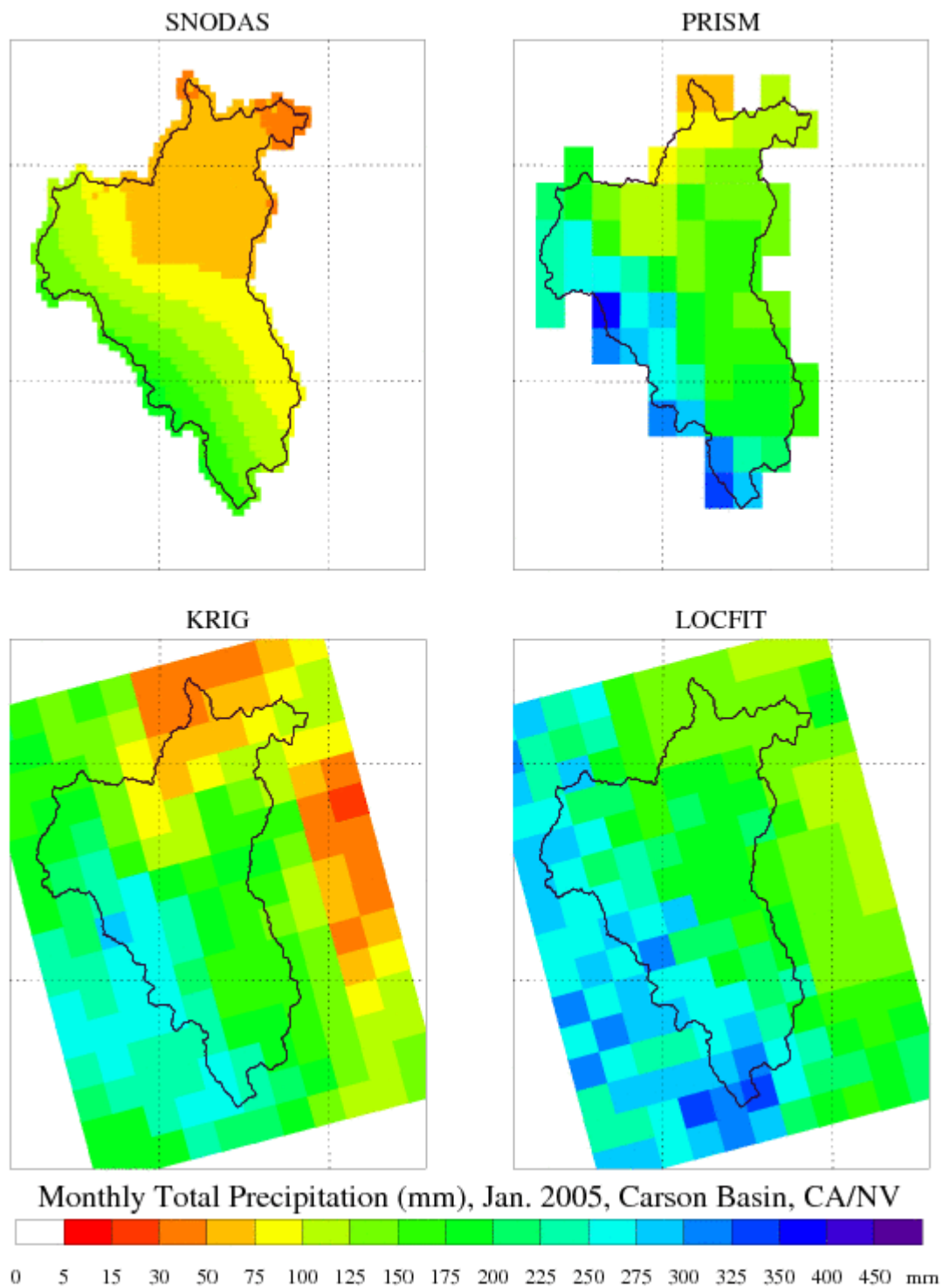


Figure 2: Similar to Figure 1 but for the Carson Basin. The data compiled by NOAA/NWS/OHD is not available beyond 2002. The NOAA/NWS/NOHRSC SNODAS product became available as of Oct 2003. Here we show the precipitation used by SNODAS compared to the other station-based methods.

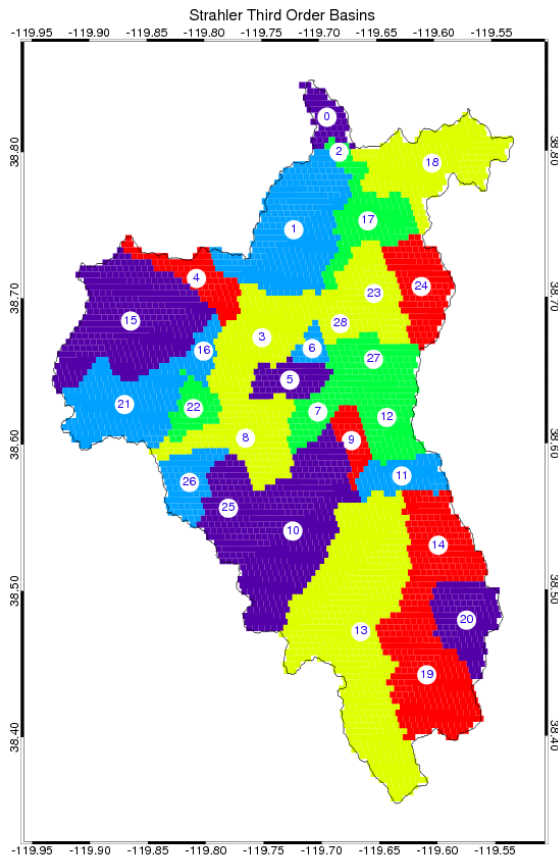


Figure 3: The 4344 pixels of the MODIS MOD10A product cover the Carson Basin in California. The Strahler 3rd order sub-basins are shown.

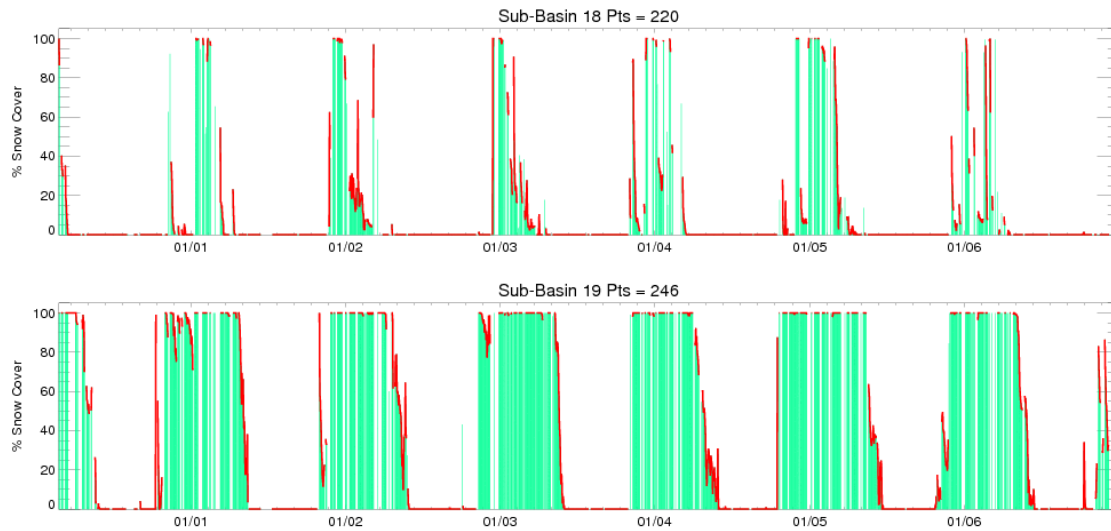


Figure 4: Snow cover extent in two sub-basins of the Carson River Basin for the years 2000-2006 based on the number of 500m MODIS pixels containing snow. Sub-basin 18 is at a lower altitude and is subject to intermittent snow cover, while sub-basin 19 is at high elevation. Both sub-basins contain more than 200 MODIS pixels. Missing or cloud contaminated data is not plotted.

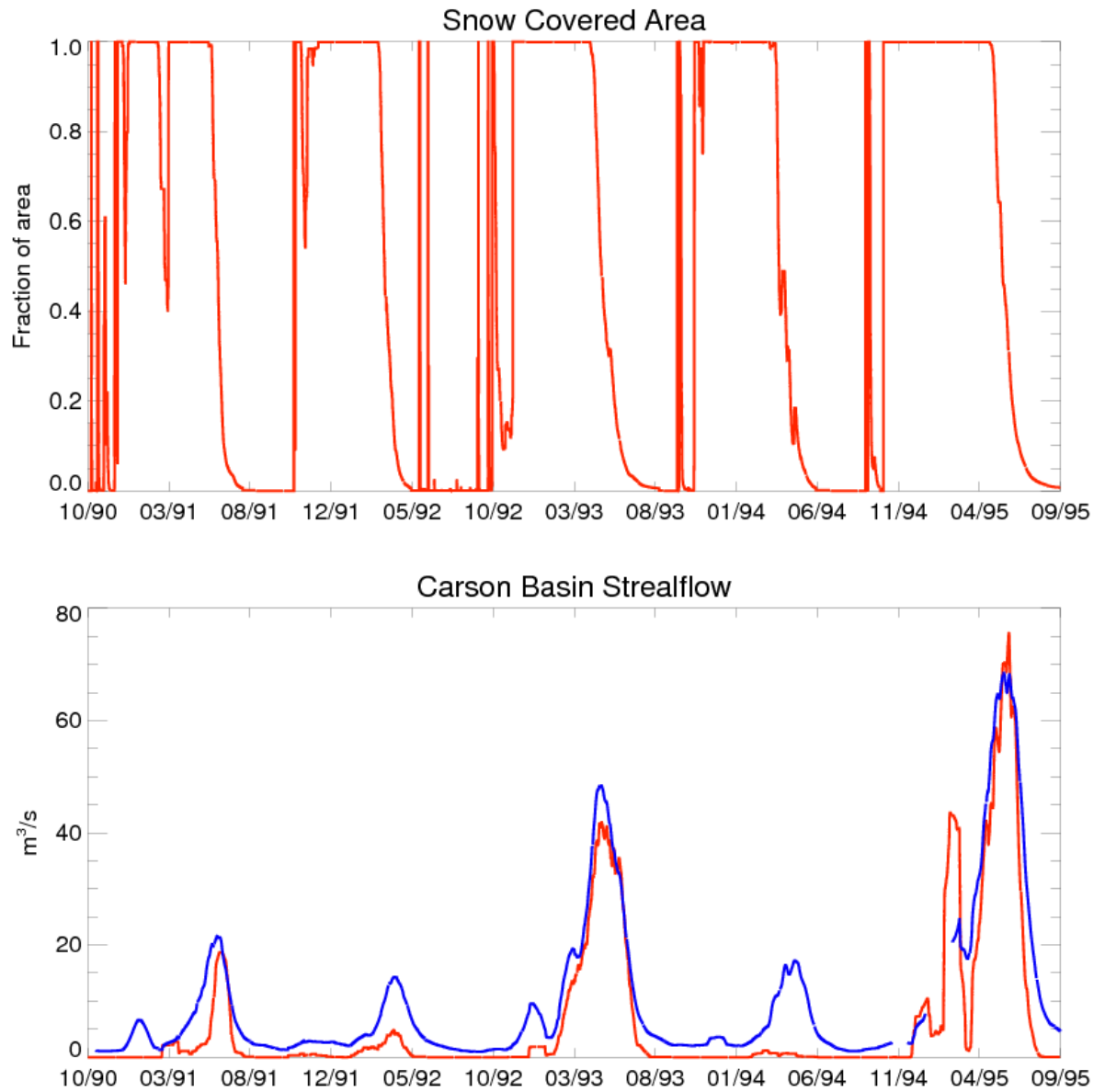


Figure 5: A simulation by the basic version of the TopNET model for the Carson basin for the period 1991-1995 water years. The red line is the model-simulated and the blue line is the observed streamflow at Markleeville.